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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,405	02/05/2002	Noriaki Ikenaga	Q68355	4115

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EXAMINER	
CROWELL, ANNA M	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/062,405	IKENAGA ET AL.	
	Examiner	Art Unit	
	Michelle Crowell	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *1-4,8 and 9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-7 and 10-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-13 are pending. Claims 1-4, 8, and 9 are withdrawn from consideration. Claims 5-7 and 10-13 are rejected.

Specification

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 5-7 and 10-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. On page 26, lines 13-25, the applicant indicates that plasma is generated by exciting Argon gas using electrode 5 and DC high voltage power source 15. Once plasma is generated, Argon ions from the plasma are implanted into container 2. Additionally, claim 5 indicates that plasma ions are implanted into the container. However, since argon is such a chemically unstable atom, it is impossible for argon to bond with another atom, and thus implanting argon ions into the container is not enabled. Furthermore, there are simply no known true chemical compounds that contain argon. Moreover, it should be noted that argon ions could be used in ion bombardment of a material, but not in ion implantation as taught by Bull et al. (U.S. 6,096,439-abstract). Therefore, it should be

described in the specification and explained to the Examiner how ions from argon are implanted into the container.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 5-7, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plester (WO 95/22413) in view of Denholm et al. (U.S. 5, 911,832) or Liebert et al. (U.S. 6,020,592).

Referring to Figures 1 and 2, page 8, line 19-page 9, line 12, and page 10, line 2-page 13, line 17, Plester discloses an apparatus for modifying a surface of a container made of a polymeric compound comprising: a reception chamber 1 adapted for receiving the container 2 while keeping airtightness; a vacuum pump for evacuating the reception chamber 1 (pg 11, line

35-page 12, line 2); a plasma generating unit 6 for generating plasma in the reception chamber 1 (pg 10, lines 11-13); an electrode 3 adapted for being inserted into the container 2 received in the reception chamber 1 (pg 10, lines 11-16); and a high voltage power source 6 for applying high voltage to the electrode (pg 10, lines 11-16); wherein an interior side surface layer of the container received in the reception chamber is modified into a material that is not permeable (pg. 9, lines 3-12, pg. 13, lines 4-17, and claims 28-29).

Regarding the claim limitation of a material that is not permeable by **carbon dioxide gas and oxygen** or a material that is hard to be permeated by **carbon dioxide gas and oxygen**, it should be noted that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Thus, since the interior side surface layer of Plester is an inert or impermeable material, the apparatus of Plester is capable of not being permeated by or hard to be permeated by carbon dioxide gas and oxygen.

Plester fails to teach applying high voltage positive pulses to the electrode and an apparatus that implants ions into an interior side surface of the container.

Referring to column 4, line 3-column 5, line 40 of Denholm et al. or column 4, lines 50-57 and column 5, lines 12-33 of Liebert et al., Denholm et al. or Liebert et al. discloses an apparatus that applies high voltage positive pulses to an electrode inside of the chamber in order to accelerate (implant) ions into the substrate with the desired depth and dose of impurity material (col.4, lines 33-38 of Denholm et al., col.5, lines 22-30 of Liebert et al.). Additionally, since it is well established in the art that a substrate is merely the material that is processed or

worked upon by the apparatus, the substrate in the instant application is simply the interior side surface of the container. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply high voltage positive pulses to the electrode inside of the container of Plester as taught by Denholm et al. or Liebert et al in order to accelerate ions into the interior side surface of the container with the desired depth and dose of impurity material.

With respect to claim 6, Plester further includes the apparatus having a magnetic field generating unit 36 for generating a magnetic field in the reception chamber 1 (Fig. 2C, pg. 14, lines 22-26).

With respect to claim 7, Plester further includes the apparatus having a gas supply source 4 for supplying gas into the reception chamber 1 (pg. 10, lines 5-8).

With respect to claim 10, Plester further includes the apparatus wherein the high voltage power source 6 also serves as the plasma generating unit 6 (pg 10, lines 11-16).

With respect to claim 13, Plester further includes the apparatus wherein the container 2 made of a polymeric compound such as polyethylene terephthalate (pg. 13, line 3, line 13, claim 11).

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Plester (WO 95/22413) in view of Denholm et al. (U.S. 5, 911,832) or Liebert et al. (U.S. 6,020,592) as applied to claims 5-7, 10, 12, and 13 above, and further in view of Hayashi et al. (U.S. 5,578,130).

The teachings of Plester in view of Denholm et al. or Liebert et al. are discussed above.

Plester in view of Denholm et al. or Liebert et al. fails to explicitly teach a solenoid coil.

Referring to column 6, lines 44-61 and column 8, lines 14-19, Hayashi et al. teaches an apparatus wherein the magnetic field generating unit is a solenoid coil. Solenoid coils are used to apply a magnetic field for enhanced plasma density. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the magnetic field generating unit of Plester in view of Denholm et al. or Liebert et al. to be a solenoid coil since it is an equivalent means of applying a magnetic field for enhanced plasma density.

Response to Arguments

Applicant's arguments filed May 25, 2005 have been fully considered but they are not persuasive.

Applicant has argued that the apparatus of Denholm et al. is used for uniform gas density and by combining the references would destroy the uniformity of gas density required by Denholm et al. It should be noted that Plester et al. has a gas inlet arrangement and Denholm et al. was simply applied to teach modifying a surface through ion implantation by applying high voltage positive pulses to the electrode (col. 4, lines 33-38 of Denholm et al.).

Applicant has argued that Plester fails to teach feature of claim 5 of modifying the interior side surface of the container through ion implantation. In response to applicant's arguments against the references (Plester) individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). It should be noted that Plester teaches modifying the interior

side surface of the container by surface reaction (pg. 13, lines 4-17 and claims 28-29). Denholm et al. or Liebert et al. teach modifying a surface through ion implantation by applying high voltage positive pulses to the electrode (col. 4, lines 33-38 of Denholm et al., col. 5, lines 22-30 of Liebert et al.). Thus, the combinations of Plester and Denholm et al. or Liebert et al. teach the feature of modifying the interior side surface of the container through ion implantation by applying high voltage positive pulses to the electrode.

Applicant has argued that Plester emphasizes coating the inside of the container and not modifying the inside of the container to generate an impermeable surface through surface reaction. As discussed on page 12, lines 29-32 and claim 13, Plester teaches coating the inside of the container. However, as discussed on page 4, lines 13-24, page 8, line 19-page 9, line 2, and page 13, lines 4-17 and claims 28-29, Plester alternatively can modify the inside of the container to produce an impermeable surface through surface reaction.

Applicant has argued that there is no motivation to combine Plester with Denholm et al. or Liebert et al. The motivation to combine Plester with Plester with Denholm et al. or Liebert et al. is to accelerate ions into the interior side surface of the container with the desired depth and dose impurity material.

In response to applicant's argument that neither Denholm et al. nor Liebert can implant ions to the interior side surface of the container ~~since it~~ since the container would be disposed on a plate, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the

art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instant application, Denholm et al. and Liebert et al. were simply applied for the teaching of pulsing the electrode of Plester and not to replace the electrode or add a plate (by holding the container on a plate) to the apparatus of Plester.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Laurent'334, Fayet et al.'503, Plester et al.'691, Felts'695, and Rius'805 teach containers wherein the surface is treated by plasma.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571) 272-1432. The examiner can normally be reached on M-F (9:30 -6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMC
08-01-05

P.L

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SUPERVISORY PATENT EXAMINER